146, 147, 160, 161).

What is claimed is:

1 A DNA sequence encoding a polypeptide of the formula 2 3 WYBAZCX wherein WYBAZCX is composed of the polypeptide segments shown\in Figure 31 (SEQ ID Nos. 136-139, 141-147, 6 160, 161, and 163); wherein W comprises polypeptide segment F, or is absent; wherein Y comprises polypeptide segment E, or is absent; wherein Z comprises polypeptide segment G or 8 is absent; and wherein X comprises polypeptide segments C/D HKL, C/D H, C/D HL, C/D D, C/D' HL, C/D' HKL, C/D' H, C/D' 10 D, C/D C/D' HKL, C/D C/D' H, C/D C/D' HL, C/D C/D' D, C/D D' 11 H, C/D D' HL, C/D D' HKL, C/D' D' H, C/D' D' HKL, C/D C/D' 12 D' H, C/D C/D' D' HL, C/D/C/D' D' HKL, or C/D' D' HL; 13 14 provided that, either 15 a) at least one/of F, Y, B, A, Z, C, or X is of 16 bovine origin; or b) Y comprises polypeptide segment E; or 17 c) X comprises polypeptide segments C/D HKL, C/D D, 18 C/D' HKL, C/D C/D' HKL, C/D C/D D, C/D D' H, C/D D' HL, C/D 19 D' HKL, C/D' D' H, C/D' D' HKL, C/D C/D' D' H, C/D C/D' D' 20 HL, C/D C/D' D' HKL, C/D'H, C/D C/D'H, or C/D C/D'HL. 21 The DNA sequence of claim 1, wherein X 1

comprises polypeptide segments C/D HKL having the amino acid

sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-142,

- The DNA s quence f claim 1, wh r in X

 comprises polypeptide segments C/D' H having the amino acid

 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 143,

 4 146, 160).
- 1 4. The DNA sequence of claim 1, wherein X
 2 comprises polypeptide segments C/D D having the amino acid
 3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 142,
 4 144, 160).
- 5. The DNA sequence of claim 1, wherein X
 comprises polypeptide segments C/D' HKL having the amino
 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141,
 4 143, 146, 147, 160, 161).
- 6. The DNA sequence of claim 1, wherein X
 comprises polypeptide segments C/D C/D' HKL having the amino
 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 1414 143, 146, 147, 160, 161)
- 7. The DNA sequence of claim 1, wherein X
 comprises polypeptide segments C/D C/D' H having the amino
 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 1414 143, 146, 160).
- 1 8. The DNA sequence of claim 1, wherein X
 2 comprises polypeptide segments C/D C/D' HL having the amino
 3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 1414 143, 146, 147, 160).

9. Th DNA s quenc f claim 1, wher in X

comprises polypeptid segments C/D C/D' D having the amino

acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141
4 144, 160).

- 1 10. The DNA sequence of claim 1, wherein X
 2 comprises polypeptide segments C/D D'H having the amino acid
 3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-142,
 4 145, 146, 160).
- 11. The DNA sequence of claim 1, wherein X
 2 comprises polypeptide segments C/D D'H L having the amino
 3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 1414 142, 145, 146, 147, 160)
- 1 12. The DNA sequence of claim 1, wherein X
 2 comprises polypeptide segments C/D D'H K L having the amino
 3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 1414 142, 145-147, 160, 161).
- 13. The DNA sequence of claim 1, wherein X
 2 comprises polypeptide segments C/D' D' H having the amino
 3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141,
 4 143, 145, 146, 160).
- 14. The DNA sequence of claim 1, wherein X
 2 comprises polypeptide segments C/D' D' H K L having the
 3 amino acid sequences shown in Figure 31 (SEQ ID Nos. 1364 139, 141, 143, 145-147, 160, 161).

- 15. The DNA sequenc f claim 1, wh rein X
 comprises polypeptid egm nts C/D C/D' D' H having the
 amino acid sequences shown in Figure 31 (SEQ ID Nos. 136139, 141-143, 145, 146, 160).
- 1 16. The DNA sequence of claim 1, wherein X 2 comprises polypeptide segments C/D C/D' D' H L having the 3 amino acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-143, 145-147, 160).
- 1 17. The DNA sequence of claim 1, wherein X 2 comprises polypeptide segments C/D C/D' D' H K L having the 3 amino acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-143, 145-147, 160, 161).
- 18. The DNA sequence comprising coding segments
 2 5'FBA'3' coding for polypeptide segments having the amino
 3 acid sequences shown in Figure 31 (SEQ ID Nos. 136, 138,
 4 139).
- 19. The DNA sequence comprising coding segments
 2 5'FBA'3' coding for polypeptide segments having the amino
 3 acid sequences shown in Figure 31 (SEQ ID Nos. 136, 138,
 4 140).
- 20. The DNA sequence comprising coding segments
 2 5'FEBA3' coding for polypeptide segments having the amino
 3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139,
 4 163).

12

13

16

that, either

- 21. The DNA sequenc comprising oding segments 1 5'FEBA'3' oding for polyp ptide s gments having th amino 2 acid s quenc s shown in Figur 31 (SEQ ID Nos. 136-138, 140, 3 4 163). Purified DNA encoding GGF2HBS5. 22. . 1 A polypeptide of the formula 1 WYBAZCX 2 wherein WYBAZCX is composed of the polypeptide 3 segments shown in Figure 31 (SEQ ID Nos. 136-139, 141-147, 4 160, 161, 163); wherein W comprises polypeptide segment F, 5 or is absent; wherein X comprises polypeptide segment E, or 6 is absent; wherein Z comprises polypeptide segment G or is 7 absent; and wherein X comprises peptide segments C/D HKL, 8 C/D H, C/D HL, C/D D, C/D' HL, C/D' HKL, C/D' H, C/D' D, C/D 9 C/D' HKL, C/D C/D' H, C/D C/D' HL, C/D C/D' D, C/D D' H, C/D 10 D' HL, C/D D' HKL, C/D' D' H, C/D' D' HKL, C/D C/D' D' H,
- a) at least one of F, Y, B, A, Z, C, or X is of 14 bovine origin; or 15
 - b) Y comprises polypeptide segment E; or

C/D C/D' D' HL, C/D C/D' D' HXL, or C/D' D' HL; provided

- C) X comprises polypeptide *egments C/D HKL, C/D' 17
- HKL, C/D D, C/D C/D' HKL, C/D C/D' D, C/D D' H, C/D D' HL, 18
- C/D D' HKL, C/D' D' H, C/D' D' HKL, C/D C/D' D' H, C/D C/D' 19
- D' HL, C/D C/D' D' HKL, C/D'H, C/D C/D'H, or C/D C/D'HL. 20

- 24. A polypeptid f claim 23, wh r in X mpris s

 2 C/D HKL polypeptid s gments having th amino acid s qu n es

 3 shown in Figure 31 (SEQ ID Nos. 136-139, 141-142, 146, 147,

 4 160, 161).
- 25. A polypeptide of claim 23, wherein X comprises 2 C/D D polypeptide segments having the amino acid sequences 3 shown in Figure 31 (SEQ ID Nos. 136-139, 141, 142, 144, 160).
- 26. A polypeptide of claim 23, wherein X comprises 2 C/D' H polypeptide segments having the amino acid sequences 3 shown in Figure 31 (SEQ ID Nos. 136-139, 141, 143, 146, 160).
- 27. A polypeptide of claim 23, wherein X comprises

 2 C/D' HKL polypeptide segments having the amino acid

 3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 143,

 4 146, 147, 160, 161).
- 28. A polypeptide of claim 23, wherein X comprises
 C/D C/D' HKL polypeptide segments having the amino acid
 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-143,
 4 146, 147, 160, 161).
- 29. A polypeptide of claim 23, wherein X comprises
 C/D C/D' H polypeptide segments having the amino acid
 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-143,
 4 146, 160).

- 30. A polypeptid f claim 23, wh r in X ompris s C/D C/D' HL polypeptid segments having th amin acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-43,146, 147, 160).
- 31. A polypeptide of claim 23, wherein X comprises 2 C/D C/D' D, polypeptide segments having the amino acid 3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-144, 4 160).
- 32. A polypeptide of claim 23, wherein X comprises
 C/D D'H polypeptide segments having the amino acid
 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 142,
 4 145, 146, 160).
- 33. A polypeptide of claim 23, wherein X comprises
 C/D D'H L polypeptide segments having the amino acid
 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 142,
 4 145-147, 160).
- 34. A polypeptide of claim 23, wherein X comprises

 C/D D'H K L polypeptide segments having the amino acid

 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 142,

 4 145-147, 160, 161).
- 35. A polypeptide of claim 23, wherein X comprises

 C/D' D' H polypeptide segments having the amino acid

 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 143, 145, 146, 160).

- 36. A polypeptide f claim 23, wher in X compris s
 2 C/D' D' H K L polyp ptide segments having th amin a id
 3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 143,
 4 145-147, 160, 161).
- 37. A polypeptide of claim 23, wherein X comprises
 C/D C/D' D' H polypeptide segments having the amino acid
 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-143,
 4 145, 146, 160).
- 38. A polypeptide of claim 23, wherein X comprises C/D C/D' D' H L polypeptide segments having the amino acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-143, 145-147, 160).
- 39. A polypeptide of claim 23, wherein X comprises
 C/D C/D' D' H K L polypeptide segments having the amino acid
 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-143,
 4 145-147, 160, 161).
- 1 40. A polypeptide comprising FBA polypeptide 2 segments having the amino acid segmences shown in Figure 31 3 (SEQ ID Nos. 136, 138, 139).
- 1 41. A polypeptide comprising FEBA polypeptide 2 segments having the amino acid sequences shown in Figure 31 3 (SEQ ID Nos. 136-139, 163).
- 1 42. A polypeptide comprising FBA' polypeptide 2 segments having the amino acid sequences shown in Figure 31 3 (SEQ ID Nos. 136, 139, 140).

2

3

1

- 1 43. A polypeptide comprising FEBA' polypeptide 2 s gments having th amin acid sequenc s shown in Figur 31 3 (SEQ ID Nos. 136-139, 140, 163).
 - 44. Purified GGF2HBS5 polypeptide.
- 1 45. A basic polypeptide factor having mitogenic 2 activity stimulating the division of Schwann cells in the 3 presence of fetal calf plasma, said polypeptide having a 4 molecular weight of from about 30 kD to about 36 kD, said 5 polypeptide including within its amino acid sequence any one 6 or more of the following polypeptide sequences:

```
7
        FKGDAHTÈ
        A S L A D E Y E\Y M X K
8
        TETSSSGLXLK
. 9
        A S L A D E Y E Y M R K
10
        AGYFAEXAR
11
        TTEMASEQ-GA
12
        AKEAL/ALK
13
        FVLQXXX
14
        ETQPDPGQIİKKVPMVIGAYT
15
        EYKCLKFKWF/KKATVM
16
        EXKFYVP
17
        KLEFLXAK
18
```

46. A basic polypeptide factor having mitogenic activity stimulating the division of Schwann cells in the presence of fetal calf plasma, said polypeptide having a molecular weight of from about 55 kb to about 63 kD, and said polypeptide including within its amino acid sequence any one or more of the following peptide sequences:

```
VHQVWAAK
7
       YIFFMEPEAX.SSG
8
       LGAWGPPAFPVXY
9
       WFVVIEGK
10
       A S P V S V G S V Q E L V Q R
11
       VCLLTVÄALPPT
12
       KVHQVWAAK
13
        KASLADSGEYMXK
14
        DLLLXV
15
        EGKVHPQR\RGALDRK
16
        PSCGRLKED SRYIFFME
17
        ELNRKNKPQNIKIQKK
18
```

1 47. A method for stimulating mitogenesis of a glial 2 cell, said method comprising contacting said glial cell with 3 a polypeptide defined by the formula

WYBAZCX

wherein WYBAZCX is composed of the polypeptide 5 segments shown in Figure 31 (SEQ \ID Nos. 136-139, 141-147, 6 160, 161, 163); wherein W comprises polypeptide segment F, 7 or is absent; wherein Y comprises polypeptide segment E, or 8 is absent; wherein Z comprises polymeptide segment G or is 9 absent; and wherein X comprises polypeptide segments C/D 10 HKL, C/D H, C/D HL, C/D D, C/D' HL, C/D' HKL, C/D' H, C/D' 11 D, C/D C/D' HKL, C/D C/D' H, C/D C/D' \HL, C/D C/D' D, C/D D' 12 H, C/D D' HL, C/D D' HKL, C/D' D' H, C/D' D' HL, C/D' D' 13 HKL, C/D C/D' D' H, C/D C/D' D' HL, or C/D C/D' D' HKL. 14

- 1 48. A m thod f r stimulating mitogenesis f a glial 2 cell, said method comprising contacting said glial cell with 3 a polypeptide comprising FBA polypeptide segments having the 4 amino acid sequences shown in Figure 31 (SEQ ID Nos. 136, 138, 139).
- 2 cell, said method comprising contacting said glial cell with a polypeptide comprising FBA' polypeptide segments having the amino acid sequences shown in Figure 31 (SEQ ID Nos. 5 136, 138, 140).
- 50. A method of stimulating mitogenesis of a glial cell, said method comprising contacting said glial cell with a polypeptide comprising FEBA polypeptide segments having the amino acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 163).
- 51. A method of stimulating mitogenesis of a glial cell, said method comprising contacting said glial cell with a polypeptide comprising FEBA' polypeptide segments having the amino acid sequences corresponding to polypeptide segments shown in Figure 31 (SEQ ID Nos. 136-138, 140, 163) to glial cells.
- 52. A method of stimulating mitogenesis of a glial cell, said method comprising contacting said glial cell with GGF2HBS5 polypeptide.
- 53. A method of stimulating mitogenesis of a glial cell said method comprising contacting said glial cell with a compound which specifically binds the plaserbase receptor of glial cells.

- 54. A method f stimulating mitogen sis f a glial ell, said method omprising contacting said glial cell with a polypeptide, comprising EGFL1, having the amino acid sequence shown Fig. 38, Seq. ID No. 154.
- 55. A method of stimulating mitogenesis of a glial cell, said method comprising contacting said glial cell with a polypeptide, comprising EGFL2, having the amino acid sequence shown in Figure 39, Seq. ID No. 155.
- 56. A method of stimulating mitogenesis of a glial cell, said method comprising contacting said glial cell with a polypeptide, comprising EGFL 3, with the amino acid sequence shown in Fig. 40, Seq. ID No. 156.
- 57. A method of stimulating mitogenesis of a glial cell, said method comprising contacting said glial cell with a polypeptide, comprising EGFL4, with the amino acid sequence shown in Fig. 41, Seq. ID No. 157.
- 1 58. A method of stimulating mitogenesis of a glial cell, said method comprising contacting said glial cell with a polypeptide, comprising EGFLS, with the amino acid sequence shown in Fig. 42, Seq. ID No. 158, to glial cells.
- 1 59. A method of stimulating mitogenesis of a glial cell, said method comprising contacting said glial cell with a polypeptide, comprising EGFL6, with the amino acid sequence shown Fig. 43, Seq. ID No. 159.
- 1 60. A method for the prophylaxis or treatment of a 2 pathophysiological condition of the nervous system in a 3 mammal in which said condition involves a ell type which is

- r k sponsive to a polypeptide as defin d in any sensitiv
- on of claims 1 and 18-22, said method comprising 5
- administering to said mammal an effective amount of said
- polypeptide. 7
- 61. A method as claimed in claim 60, wherein said 1 condition involves peripheral nerve damage. 2
- The method as claimed in claim 60, wherein said 1 condition involves glia of the central nervous system. 2
- A method of\stimulating mitogenic activity in a 1 glial cell, said method comprising applying 35 kD 2 polypeptide factor isolated from the rat I-EJ transformed
- 3 fibroblast cell line to said ghial cell.
- 64. A method of stimulating mitogenic activity in a 1 glial cell, said method comprising applying 75 kD 2 polypeptide factor isolated from the SKBR-3 human breast 3 cell line to said glial cell.
- 65. A method of stimulating mitogenic activity in a 1 glial cell, said method comprising applying 44 kD 2 polypeptide factor isolated from the rat I-EJ transformed 3 fibroblast cell line to said glial cell. 4
- A method of stimulating mitogenic activity in a 1 glial cell, said method comprising applying 45 kD 2 polypeptide factor isolated from the MDA - MB 231 human 3

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2 glial cell, said method comprising applying 7 to 14 kD polypeptide factor isolated from the ATL-2 human T-cell line to said glial cell.
```

- 1 68. A method of stimulating mitogenic activity in a 2 glial cell, said method comprising applying 25 kD 3 polypeptide factor isolated from activated mouse peritoneal 4 macrophages to said glial cell.
- 1 69. A method of stimulating mitogenic activity in a 2 glial cell, said method comprising applying a 25 kD 3 polypeptide factor isolated from bovine kidney to said glial 4 cell.
- 70. A method of stimulating mitogenic activity in a glial cell, said method comprising applying ARIA polypeptide to said glial cell.
- 71. A polypeptide factor having glial cell 2 mitogenic activity and including an amino acid sequence 3 encoded by:-
- 4 (a) a DNA sequence shown in any one of Figures 28a, 5 28b or 28c (SEQ ID Nos. 133-135, respectively).
- 6 (b) a DNA sequence shown in Figure 22 (SEQ ID No.
- 7 89);
- 8 (c) the DNA sequence represented by nucleotides
- 9 281-557 of the sequence shown in Figure 28a.
- 10 (d) a DNA sequence hybridizable to any one of the
- 11 DNA sequences according to (a), (b) or (c).

A basic polypeptid fact r having a mol cular 1 weight, whether in reducing conditions or not, of from about 2 30 kD to about 36 kD on SDS-polyacrylamide gel 3 electrophoresis, said polypeptide factor having mitogenic 4 activity stimulating the division of rat Schwann cells in 5 the presence of fetal calf plasma, and when isolated using 6 reversed-phase HPLC retaining at least 50% of said activity 7 after 10 weeks incubation in 0.1% trifluoroacetic acid at 4°C. 9

A basic polypeptide factor having a molecular 1 weight, under non-reducing conditions, of from about 55 kD 2 to about 63 kD on SDS-polyacrylamide gel electrophoresis, 3 said polypeptide factor having mitogenic activity 4 stimulating the division of rat Schwann cells in the 5 presence of fetal calf plasma, and when isolated using reversed-phase HPLC retains at least about 50% of said 7 activity after 4 days incubation in 0.1% trifluoroacetic acid at 4°C. 9

```
74, A method f r th preparati n of a polyp ptid
1
   defined in claim 72 or claim 73, said meth d omprising
2
   extracting vertebrate brain material to obtain protein,
   subjecting said protein to chromatographic purification
   comprising hydroxylapatite HPLC and thereafter to SDS-
   polyacrylamide gel electrophoresis and collecting that
    fraction therefrom which has an observed molecular weight of
    about 30 kD to 36 kD and/or that fraction which has an
    observed molecular weight of about 55 kD to 63 kD if, in
9
    either case, subjected to SDS-polyacrylamide gel
10
    electrophoresis; in the case of said smaller molecular
11
    weight fractions whether in reducing conditions or not, and
12
    in the case of said larger molecular weight fraction under
13
    non-reducing conditions, and which fraction(s) exhibit(s)
14
    mitogenic activity stimulating the division of rat Schwann
15
    cells against a background of fetal calf plasma.
16
```

- 75. A method as claimed in claim 74, wherein the 2 brain material in said method is pituitary material.
- 76. A method as claimed in claim 75, wherein said pituitary material in said method is bovine.
- 77. A method as claimed in claim 74, wherein said protein used in said method is initially extracted from brain material is first subjected to carboxymethyl cellulose chromatography.
- 78. A method as claimed in claim 74 wherein after said hydroxylapatite HPLC, said method uses cation exchange chromatography, gel filtration, and/or reversed-phase HPLC.

- 79. A method as claimed in laim 74, wherein at ach stage f aid method biol gical activity of material obtained is assessed for mitogenic activity stimulating the division of rat Schwann cells in the presence of fetal calf plasma.
- 2 cell mitogenic activity, said method comprising contacting 3 said substance with glial cells in the presence of fetal 4 calf plasma, and the measuring DNA synthesis in said glial 5 cells as a measure of glial cell mitogenic activity.
- 81. An assay as claimed in claim 80, wherein said 2 glial cells are Schwann cells.
- 1 82. A DNA sequence encoding a polypeptide having 2 glial cell mitogenic activity and comprising:
- 3 (a) a DNA sequence shown in any one of Figures 28a,

4 28b, or 28c (SEQ TD Nos. 133-135)

(b) a DNA sequence shown in Figure 22 (SEQ ID No.

6 89);

- 7 (c) the DNA sequence represented by nucleotides
- 8 281-557 of the sequence shown in Figure 28a; or
- 9 (d) a DNA sequence hybridizable to any one of the
- 10 DNA sequences according to (a), (b) or (c).
 - 1 83. A polypeptide which is a glial cell mitogen,
 - 2 said polypeptide being encoded by a DNA sequence as defined
 - in claim 82, said polypeptide obtained by a method
 - 4 comprising for the preparation of a glial cell mitogenic
 - 5 factor, said method cultivating modified host cells under
 - 6 conditions permitting expression of said DNA sequence.

- 1 84. A v ct r comprising a DNA s quenc as d fin d 2 in claim 82.
- 1 85. A host cell containing the isolated DNA of 2 claim 84.
- 1 86. A method for the preparation of a glial cell 2 mitogenic factor, said method comprising cultivating 3 modified host cells as defined in claim 85 under conditions 4 permitting expression of said DNA sequence.
- 1 87. A polypeptide which is a glial cell mitogen,
 2 said polypeptide being encoded by a DNA sequence as defined
 3 in claim 1, said polypeptide obtained by a method comprising
 4 for the preparation of a glial cell mitogenic factor, said
 5 method cultivating modified host cells under conditions
 6 permitting expression of said DNA sequence.
- 1 88. A polypeptide which is a glial cell mitogen,
 2 said polypeptide being encoded by a DNA sequence as defined
 3 in any one of claims 18-22, said polypeptide obtained by a
 4 method comprising for the preparation of a glial cell
 5 mitogenic factor, said method cultivating modified host
 6 cells under conditions permitting expression of said DNA
 7 sequence.
- 2 presence of a molecule having a receptor binding
 3 characteristic of a polypeptide defined in any one of claims
 4 23, 40-46, 71-73, or 87, said method comprising the steps of
 5 a) contacting said sample with a polypeptide of any
 6 one of claims 22, 39-42, 63-65, 72, 73 or 80, along with a

- 7 receptor capabl of binding specifically t said 8 polypeptide, and
- b) detecting competitive inhibition of the binding
 of said polypeptide to said receptor as an indication of the
 presence of a receptor binding molecule in said sample.
 - glial tumor in a patient, said method comprising
 administering to said patient an effective amount of a
 substance which inhibits the binding of a factor as defined
 in any one of claims 23, 40-46, 71-73, or 87 to a receptor
 therefor.
 - 91. A pharmaceutical or veterinary formulation 2 comprising a polypeptide as defined in any of claims 23, 40-3 46, 71-73, or 87 formulated for pharmaceutical or veterinary 4 use, respectively, together with an acceptable diluent, 5 carrier or excipient and/or in unit dosage form.
 - 1 92. A method for stimulating mitogenesis of a glial cell, said method comprising contacting said glial cell with a polypeptide as defined in any one of claims 23, 40-46, 71-473, or 87.
 - 93. A polypeptide, as defined in any one of claims 2 23, 40-46, 71-73, or 87 for use as a glial cell mitogen.
 - 94. A method for stimulating mitogenesis of a glial cell in a vertebrate, said method comprising contacting said glial cell with an effective amount of a polypeptide defined in any one of claims 23, 40-46, 71-73, or 87 to glial cells.

```
95. A method f r th prophylaxis or tr atment f
1
   pathophysi logical c ndition f th n rvous system in a
2
   mammal in which said condition involves a cell type which is
   sensitive or responsive to a polypeptide as defined in any
   one of claims 23, 40-46, 71-73, or 87, said method
5
   comprising administering an effective amount of said
6
   polypeptide.
7
```

- 96. A method for the treatment of a condition which 1 involves perigheral nerve damage in a mammal, said method 2 comprising contacting said peripheral nerves with an effective amount of a polypeptide, as defined in any one of 4 claims 23, 40-46, 71-73, or 87. 5
- A method for the prophylaxis or treatment of a condition in a mammal in said condition involves 2 demyelination or damage or loss of Schwann cells, for example a neuropathy of sensory or motor nerve fibers, said 4 5 method comprising contacting said Schwann an effective amount of a polypeptide, as defined in any one of claims 23, 40-46, 71-73, or /87. 7
- A method for the prophylaxis or treatment of a 1 neurodegenerative disorder in a mammal, said method 2 comprising contacting glial cells in a mammal with an 3 effective amount of a polypeptide as defined in any one of 4 claims 23, 40-46, 71-73, or 87.
- 99. A method for inducing neural regeneration 1 and/or repair in a mammal, said method comprising contacting 2 glial cells in a mammal with an effective amount of a polypeptide as defined in any one of claims 23, 40-46, 71-5 73, r 87.

2

3

4

5

6

7

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1 100. A method of inducing fibroblast proliferation,
2 said method comprising c ntacting said fibroblasts with a
3 polypeptide, as defined in any one of claims 23, 40-46, 71-
4 73, or 87.
```

1 101. A method of wound repair in mammals, said 2 method comprising contacting said wound with a polypeptide, 3 as defined in any one of claims 23, 40-46, 71-73, or 87.

1 102. A method of making a medicament comprising
2 admixing a polypeptide as defined in any one of claims 23,
3 40-46, 71-73, or 87 with a pharmaceutically acceptable
4 carrier.

1 103. A method for producing an antibody, said method comprising immunizing a mammal with a polypeptide of any one of claims 23, 40-46, 71-73, or 87.

presence of a molecule having a receptor binding characteristic of a polypeptide defined in any one of claims 23, 40-46, 71-73, or 87, said method comprising the steps of

- a) contacting said sample with a polypeptide of any one of claims 23, 40-46, 71-73, or 87, along with a receptor capable of binding specifically to said polypeptide, and
- b) detecting competitive inhibition of the binding
 of said polypeptide to said receptor as an indication of the
 presence of a receptor binding molecule in said sample.

1 105. A method for detecting a receptor which capable of binding to a polypeptide as defined in any one of claims 3 23, 40-46, 71-73, or 87, said method comprising carrying out

4 affinity asolati n n aid sample using a said peptid as the affinity ligand.

1 106. A method for the prophylaxis or treatment of a glial tumor in a patient, said method comprising administering to said patient an effective amount of a substance which inhibits the binding of a factor as defined in any one of claims 23, 40-46, 71-73, or 87 to a receptor therefor.

107. A pertide selected from the following:-

```
FKGDAHTE
2
       ASLADEXEYMXK
3
       TETSSSGLXLK
4
       ASLADEYEYKRK
5
       AGYFAEXA
6
       TTEMASEQGA
7
       AKEALAALK
8
       FVLQAKK
9
       ETQPDPGQILKKVPKVIGAYT
10
       EYRCLK/FRWFK/KATVM
11
       EXKFYVP
12
       KLEFLXAK
13
       VHQVWAAK
14
       YIFFMEPEXXSS
15
       LGAWGPPAFPVXX
16
       WFVVIEGE
17
       ASPVSVGSVQELVQR
18
       VCLLTVAALPPT
19
       K A H O A M Y Y K
20
       KASLADSGEYMXK
21
       DLLLXV
22
```

- 1 108. A DNA s qu no as shown in any n f Figur s 2 28a, 28b and 28c (SEQ ID No. 133-135, r spectiv ly).
- 1 109. A polypeptide encoded by a DNA sequence as defined in claim 108 (SEQ ID Nos. 133-135).
- 1 110. An antibody to a polypeptide as defined in 2 claim 107.
- 1 111. A method of investigating, isolating or
 2 preparing a glial cell mitogen or gene sequence encoding
 3 said glial cell mitogen, said method comprising contacting
 4 tissue preparations or samples with an antibody, said
 5 antibody prepared as defined in claim 103.
- 1 112. A method for isolating a nucleic acid sequence coding for a molecule having glial cell mitogenic activity, said method comprising contacting a cell containing sample with a glial cell mitogen specific antibody to determine expression of said mitogen in said sample and isolating said nucleic acid sequence from the cells exhibiting said expression.
- 1 113. The purified GGF2 polypeptide comprising the 2 amino acid sequence shown in Fig. 45 herein (SEQ ID No. 3 167).
- 1 114. A purified GGF2 DNA encoding the GGF2
 2 polypeptide whose sequences is shown in Fig. 45 (SEQ ID No. 3 167).
- 1 115. A method for inducing myelination of a neural cell by a Schwann cell, said method comprising contacting

- 3 said Schwann cell with a polypeptide f any ne f claims
- 4 23, 40-46, 71-73, r 87.
- 1 116. A method f r inducing acetylcholine rec pt r
- 2 synthesis in a cell, said method comprising ntacting of
- 3 said cell with a polypeptide of any one of claims 23, 40-46,
- 4 71-73, or 87.
- 1 117. An antibody to a polypeptide as defined in
- 2 claim 23.
- 1 118. An antibody to a polypeptide as defined in
- 2 claim 40.
- 1 119. An antibody to a polypeptide as defined in
- 2 claim 41.
- 1 120. An antibody to a polypeptide as defined in
- 2 claim 42.
- 1 121. An antibody to a polypeptide as defined in
- 2 claim 43.
- 1 122. An antibody to a polypeptide as defined in
- 2 claim 44.
- 1 123. An antibody to a polypeptide as defined in
- 2 claim 45.
- 1 124. An antibody to a polypeptide as defined in
- 2 claim 46.

- 1 125. An antibody t a polypeptide as defin d in 2 claim 71.
- 1 126. An antibody t a polypeptide as d fin d in 2 claim 72.
- 1 127. An antibody to a polypeptide as defined in 2 claim 73.
- 1 128. An antibody to a polypeptide as defined in 2 claim 87.
- 1 129. A method of purifying a protein with glial cell 2 mitogenic activity, said method comprising contacting a cell 3 extract with an antibody of any one of claims 117-128.
- 1 130. A method of treating a mammal suffering from a 2 disease of glial cell proliferation, said method comprising 3 administering to said mammal an antibody of any one of 4 claims 117-128.
- 1 131. A vector comprising a DNA sequence as defined 2 in any one of claims 1 or 18-22.

add 42 7